



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche		
ACADEMIC YEAR	2024/2025		
BACHELOR'S DEGREE (BSC)	BIOTECHNOLOGIES		
INTEGRATED COURSE	PATHOLOGY AND IMMUNOLOGY - INTEGRATED COURSE		
CODE	20449		
MODULES	Yes		
NUMBER OF MODULES	3		
SCIENTIFIC SECTOR(S)	BIO/12, MED/04		
HEAD PROFESSOR(S)	VASTO SONYA	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	VASTO SONYA	Professore Associato	Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	3		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	VASTO SONYA Monday 10:00 11:30 Dipartimento Stebicef, parco d'Orleans, Edificio 16, piano primo Wednesday 10:00 11:30 Dipartimento Stebicef, parco d'Orleans, Edificio 16, piano primo		

DOCENTE: Prof.ssa SONYA VASTO

PREREQUISITES	The ultimate goal of the integrated course is to achieve knowledge and understanding in the field of pathophysiology and medical therapy. Essential prerequisite to have basic knowledge related to the courses of Pathophysiology, Anatomy and Human, Biology and Genetics, Immunology, Microbiology and Virology inherent to the educational objectives of the course
LEARNING OUTCOMES	The student will: - acquire knowledge and understanding skills in relation to metabolic pathology and morphology and functionality of the gastrointestinal tract. - show ability to apply knowledge and understanding of the pathologies in question, with adequate communication skills
ASSESSMENT METHODS	<p>Learners at the end of the C.I. will have to demonstrate their ability to apply their knowledge and understanding for a professional approach to clinical problems of gastroenterological interest and metabolic syndrome.</p> <p>Test Tipology: Oral Test. The test aims at assessing whether the student possesses knowledge and understanding of the subjects of the integrated teaching / course program, autonomy of judgment, ability to apply acquired knowledge, specific disciplinary language.</p> <p>"Compensatory tools and dispensatory measures will be guaranteed by the Disability and Neurodiversity Center - University of Palermo (Ce.N.Dis.) to students with disabilities and neurodiversity, based on specific needs and in implementation of current legislation."</p> <p>Minimum number of questions: The student will have to answer a minimum of three oral questions, which will cover all the topics of the integrated course / course, with reference to the suggested texts.</p> <p>Valuation and Policies: The evaluation is in thirty-five, as shown in the diagram below.</p> <p>Excellent 30- 30 and praise excellent knowledge of subjects, excellent language skills, good analytic ability, the student is able to apply knowledge to solve the problems proposed; very good 26-29 - Good command of subjects, full language skills, the student is able to apply knowledge to solve the proposed problems. Good 24-25 - Basic Knowledge of Key Arguments, Discrete Language Properties, with limited ability to apply knowledge to the problem solving themselves. Satisfactory 21-23 - He does not fully master the main subjects of the teaching but possesses knowledge, satisfying language skills, poor ability to apply the acquired knowledge independently. Enough 18-20 - Minimum basic knowledge of the main topics of teaching and technical language, little or no ability to apply the acquired knowledge. Insufficient She does not have an acceptable knowledge of the contents of the topics taught in</p>
TEACHING METHODS	Frontal teaching

MODULE CLINICAL BIOCHEMISTRY

SUGGESTED BIBLIOGRAPHY

M. Ciaccio. Elementi di Biochimica Clinica e Medicina di Laboratorio. Edises, 2020.
M. Ciaccio, G. Lippi. Biochimica Clinica Medicina di Laboratorio. III edizione, Edises, 2020.

AMBIT	10643-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	47
COURSE ACTIVITY (Hrs)	28

EDUCATIONAL OBJECTIVES OF THE MODULE

Acquisition of basic and applied concepts of clinical biochemistry in order to evaluate methods and clinical applications of laboratory tests critically. Specific aim of the course is to be able to identify the correct tests in relation to clinical conditions of the patients and to be able to understand them in relation to the diagnosis. Particularly, the students must: • know the main laboratory tests and the biological, molecular and pathological basis for their use in medicine; • interpret lab results with regard to the uncertainty of measurement and biological variability; evaluate the diagnostic accuracy of laboratory investigations. • have information on the characteristics and limitations of the most important methods used in Clinical Biochemistry.

SYLLABUS

Hrs	Frontal teaching
4	Laboratory tests: definition, types, requests. Pre-analytical phase: preparation of the patient, collection of biological samples, processing and identification of biological samples.
2	Analytical phase: the biochemical and clinical analytical process: general laboratory techniques. Post-analytical phase: data collection, calculation, automatic processing. Analytical variation, analytical error, quality control systems. Intra-individual and inter-individual biological variation, reference values, nomenclature and reporting of laboratory tests. Clinical sensitivity and specificity, predictive laboratory tests.
4	Metabolism of lipids: Fatty acids, cholesterol, HDL-cholesterol, LDL-cholesterol, triglycerides, phospholipids. Lipoprotein. Dyslipidemia. Hypercholesterolemia. Atherosclerosis and cardiovascular diseases. Myocardial infarction: risk factors, biochemical modification in the necrotic area; clinical enzymes, new markers of myocardial infarction. Biomarkers in heart failure. Metabolism of glucose: Diabetes: biochemistry of DMT1 and DMT2. Hypoglycemia: clinical biochemistry
3	Clinical Biochemistry of liver diseases. Clinical Biochemistry of jaundice.
3	Metabolism of proteins: Plasma proteins. Electrophoresis of plasma proteins: interpretation of results. Laboratory evaluation of kidney function. Clinical biochemistry of kidney disease. Urinalysis.
Hrs	Workshops
12	Clinical molecular biology: diagnostic techniques used for the diagnosis of the main genetic diseases. Monogenic diseases and DNA typing. DNA mutations analysis by direct and indirect analyzes (restriction polymorphism). PCR reaction (polymerase chain reaction) for the amplification of abnormal DNA sequences. Practical exercises on the simulator arm of the venous drawing.

MODULE PATHOLOGY AND GENERAL ONCOLOGY

SUGGESTED BIBLIOGRAPHY

G.M. Pontieri a cura di Mainiero F., Misasi R., Sorice M. - Patologia generale e Fisiopatologia generale- VI Edizione, Piccin, ISBN: 978-88-299-2963-4

Rosa M. Pascale, Francesco Feo - Elementi di Oncologia Molecolare - Piccin ISBN:978-88-299-2937-5

Robbins - Basic Pathology - 10e edition Elsevier May, 10 2017 ISBN: 978-0323353175

Sono a disposizione degli studenti le presentazioni (.pdf) utilizzate durante le lezioni ed, a richiesta, articoli scientifici di approfondimento su specifici argomenti

AMBIT	10643-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	47
COURSE ACTIVITY (Hrs)	28

EDUCATIONAL OBJECTIVES OF THE MODULE

Understanding the causes and pathogenic mechanisms that alter the natural homeostasis through the cellular and molecular events involved. Use of advanced diagnostic methods in the field of human pathology

SYLLABUS

Hrs	Frontal teaching
2	Disease as an alteration of natural homeostasis, molecular mechanism of damage.
4	The inflammatory response. Acute inflammation:vascular changes, edema. Cytokines as molecular mediator of inflammatory responses and their receptors. Systemic effects of cytokines: fever, pathophysiology and different types of fever, the acute phase response. Chronic inflammation: cellular infiltration, different types of infiltration.
4	Hypersensitivity reactions: classification, activation and effector mechanisms
4	Neoplasia: nomenclature, molecular aetiology of tumors, molecular mechanisms of neoplastic transformation, oncogenes and tumor suppressor genes. Molecular markers in oncology. Cancer and inflammation. Tumor angiogenesis.
2	Anti tumor immunity: cells, mediator, tumor specific and tumor associated antigens. Use of monoclonal antibodies in human anti tumor therapy
Hrs	Practice
4	Applications in laboratory diagnostics of antigen-antibody reaction.
4	Applications of molecular biology in clinical diagnostics
4	Real time PCR: genotyping with fluorescence-labeled probes

MODULE IMMUNOLOGY

Prof.ssa SONYA VASTO

SUGGESTED BIBLIOGRAPHY

F. Celotti Patologia Generale e Fisiopatologia. ed EDISES

Robbins e Cotran: Le basi patologiche delle Malattie ed. Elsevier

AMBIT	10643-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	51
COURSE ACTIVITY (Hrs)	24

EDUCATIONAL OBJECTIVES OF THE MODULE

The teaching contributes to the training objectives included in the Biochemical-Molecular area of the Degree in Biotechnology Sciences, providing knowledge about the function of both the immune system in physiology and pathology. The teaching is aimed at providing graduates a good basic knowledge and an adequate expertise to face both the different areas of Biology and the training prosecution to obtain a Master degree.

SYLLABUS

Hrs	Frontal teaching
4	Bases of innate immune response: antigenic recognition and innate immunity receptors, cellular component and leucocyte formula
4	complement complex, cytokines protein and function
2	immune specific system, lymphocytes, major histocompatibility complex
4	Lymphocyte B and T activation, immunoglobulin classes
4	hypersensitivity 1-2-3-4
2	TCR, education, activation and immune tolerance
4	immunology of stress